Office Action Summary	Application No.	Applicant(s)	
	10/077,281	BRUNO ET AL.	
	Examiner	Art Unit	
	William C Doerrler	3744	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3,5-11,15,17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coleman et al in view of Artinian et al.

Coleman et al disclose applicants' basic inventive concept, a cooling and power generation system for an aircraft having a power turbine 24, a cooling turbine 14 and a generator 26 on the same shaft, substantially as claimed with the exception of placing a fan on the shaft to drive ram air over the precooling heat exchanger (Coleman et al uses electric fan 46 which is powered by the generator to control ram air over precooler 32). Artinian et al show this feature to be old in the art with fan 66 on the same shaft as

generator 42 and low pressure turbine 68 with the fan blowing ram air over a primary and secondary heat exchanger. Artinian also shows reheater 76, condenser 78 and water extractor 80 to condition cooling air. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Artinian et al to modify the air cycle cooling and power generation system of Coleman et al by using a fan on the same shaft to improve the compactness of the device and to use a reheater/condenser/water extractor to efficiently control the humidity of the air entering the aircraft cabin.

Claims 1-3,5-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christoff in view of Artinian et al.

Christoff discloses applicants' basic inventive concept, a cooling and power generation system for an aircraft having a power turbine 62, a cooling turbine 50 and a generator 68 on the same shaft (the generator derives it's power from the shaft with air from the cooling turbine entering a condenser 58, substantially as claimed with the exception of placing a fan on the shaft to drive ram air over the precooling heat exchanger (Christoff uses electric fan 86 which is powered by drive 88 to control ram air over precooler 84). Artinian et al show this feature to be old in the art with fan 66 on the same shaft as generator 42 and low pressure turbine 68 with the fan blowing ram air over a primary and secondary heat exchanger. Artinian also shows reheater 76, condenser 78 and water extractor 80 to condition cooling air. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Artinian et al to modify the air cycle cooling and power generation system of Christoff by using a

fan on the same shaft to improve the compactness of the device and to use a reheater/condenser/water extractor to efficiently control the humidity of the air entering the aircraft cabin.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Coleman et al or Christoff in view of Artinian et al as applied to claims 1-3 above, and further in view of Williams.

Coleman et al and Christoff each as modified disclose applicants' basic inventive concept, an air cycle cooler and power generation system for an airplane, substantially as claimed with the exception of mounting the heat exchanger in the nacelle of the plane. Williams shows this feature to be old in the air cycle airplane cooling system art (see part 80). It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Williams to modify the air cycle cooling system of either Coleman et al or Christoff by placing the primary heat exchanger in the nacelle to provide a compact cooling system and ensuring adequate air flow.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christoff in view of Artinian et al as applied to claim 13 above, and further in view of Claeys et al. Christoff as modified discloses applicants' basic inventive concept, an air cycle cooler and power generation system for an airplane, substantially as claimed with the exception of mixing the cooled dry air from the cooling turbine with recirculating air from the cabin in a mixing chamber. Claeys et al shows this feature to be old in the air cycle airplane cooling system art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Claeys et al to modify the air

cycle cooling system of Christoff by adding a mixing chamber to mix cooled dry air with recirculating air from the cabin to improve comfort in the cabin by avoiding stratification and yielding a more uniform temperature and humidity in the cabin.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Warner, Lui et al, and both Zywiak patents show multiple turbines of an air cycle system on a common shaft. Skur, Niggeman, Jonqueres and the PCT show air cycle cooling and power generation systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C Doerrler whose telephone number is (703) 308-0696. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (703) 308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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